PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-191[illegible]
(43)Date of publication of application : 13.07.1999

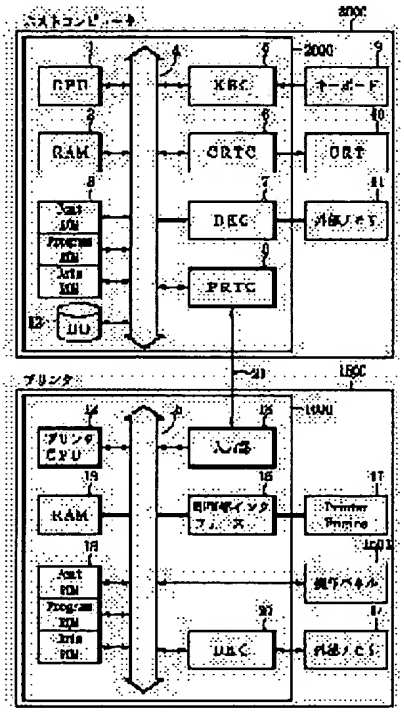
(51)Int.Cl. G06F 3/12
B41J 5/30
B41J 29/38

(21)Application number : 09-359290
(22)Date of filing : 26.12.1997

(71)Applicant : CANON INC
(72)Inventor : KONO TETSUSHI

(54) PRINT SYSTEM, DATA PROCESSING METHOD FOR PRINT SYSTEM AND STORAGE MEDIUM STORING COMPUTER READABLE PROGRAM

(57)Abstract:
PROBLEM TO BE SOLVED: To display a print progress in real time by embedding a specific command which shows a processing completion ratio of print data in print data on each print page and letting a printer which receives the print data return print processing accomplishment ratio data to the specific command.
SOLUTION: A CPU 1 acquires prescribed resource information from a printer 1500 and produces print data that is transferred to the printer 1500 according to a print mode to be set. It calculates an insertion position where a specific command that shows a processing ratio from print data is embedded in print data on each page from the produced print data and the prescribed resource information that is acquired. The specific command is embedded in an insertion position in the print data based on the calculated insertion position. Because print data in which the specific command is embedded in each page is transferred to the printer 1500, it is possible to produce effective print data which monitors the processing completion state of print data to be transferred without forcing processing load on the printer 1500.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

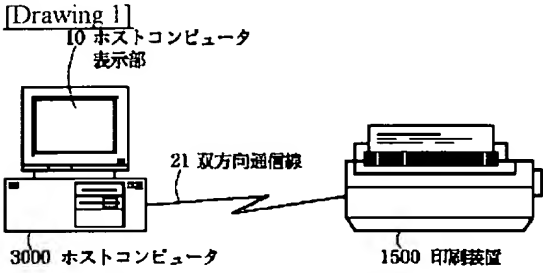
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing explaining the outline composition of the printing system concerning this invention.
[Drawing 2] It is a block diagram explaining the printing structure of a system which shows the 1st operation gestalt of this invention.
[Drawing 3] It is drawing which explains the structure of the print data transmitted to a printer from the host computer shown in drawing 2 .
[Drawing 4] It is the flow chart which shows an example of the 1st data-processing procedure in the printing system concerning this invention.
[Drawing 5] It is drawing explaining the 1st printing processing achievement rate operation processing state with the host computer shown in drawing 2 .
[Drawing 6] It is the flow chart which shows an example of the 2nd data-processing procedure in the printing system concerning this invention.
[Drawing 7] It is the flow chart which shows an example of the 3rd data-processing procedure in the printing system concerning this invention.
[Drawing 8] It is drawing explaining the 2nd printing processing achievement rate operation processing state with the host computer shown in drawing 2 .
[Drawing 9] It is drawing explaining the memory map of a storage which stores the various data-processing programs which can be read by the printing system concerning this invention.
[Description of Notations]
1 CPU
2 RAM
3 ROM
12 CPU
13 ROM
19 RAM
1500 Printer
3000 Host Computer

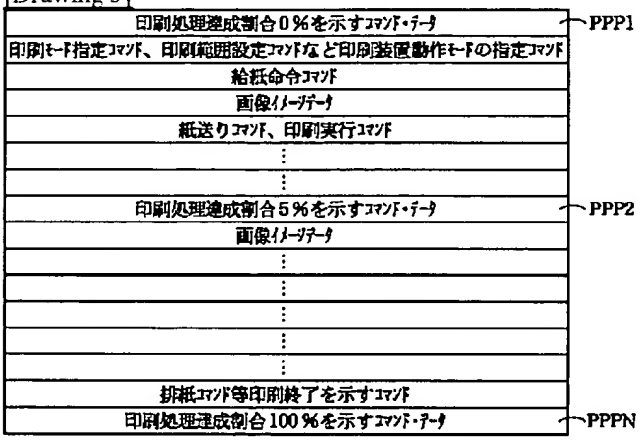
[Translation done.]

DRAWINGS

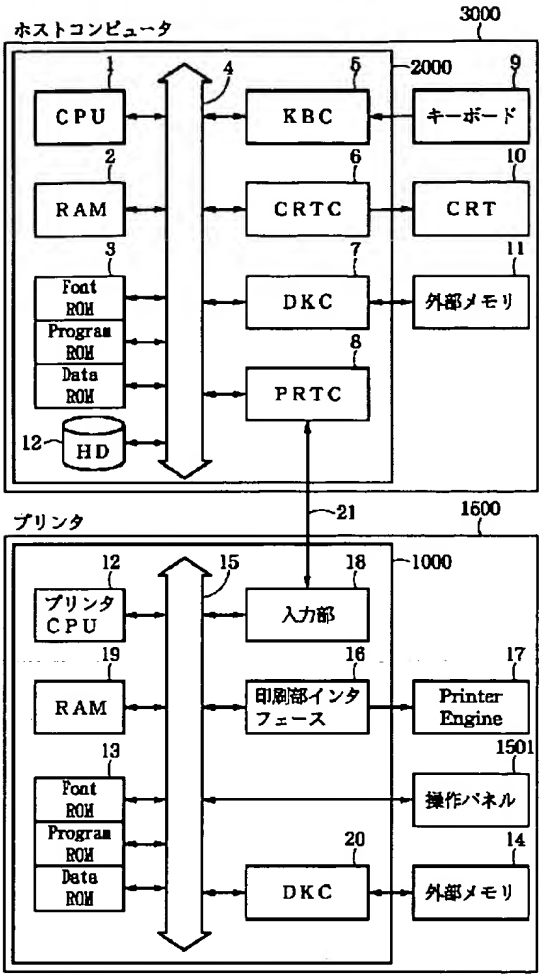
[Drawing 1]



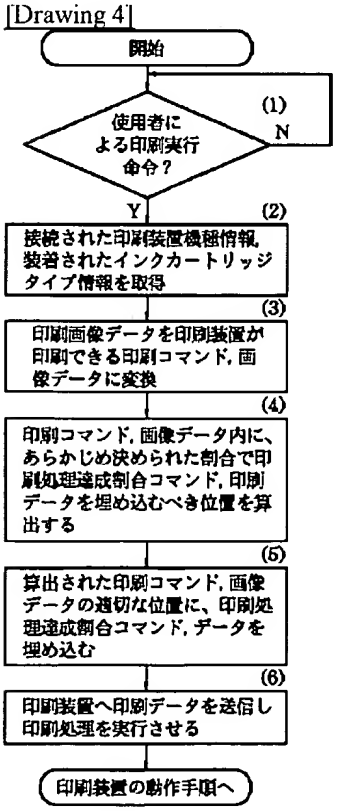
[Drawing 3]



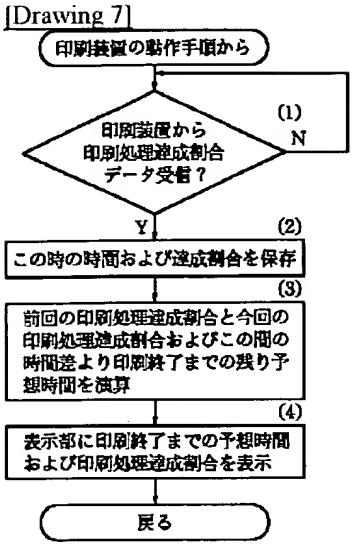
[Drawing 2]


ホストコンピュータ
3000
2000
CPU
RAM
Font ROM
Program ROM
Data ROM
HD
KBC
CRTC
DKC
PRTC
キーボード
CRT
外部メモリ
21
プリンタ
1500
1000
プリンタ CPU
RAM
Font ROM
Program ROM
Data ROM
入力部
印刷部インタフェース
DKC
Printer Engine
操作パネル
外部メモリ

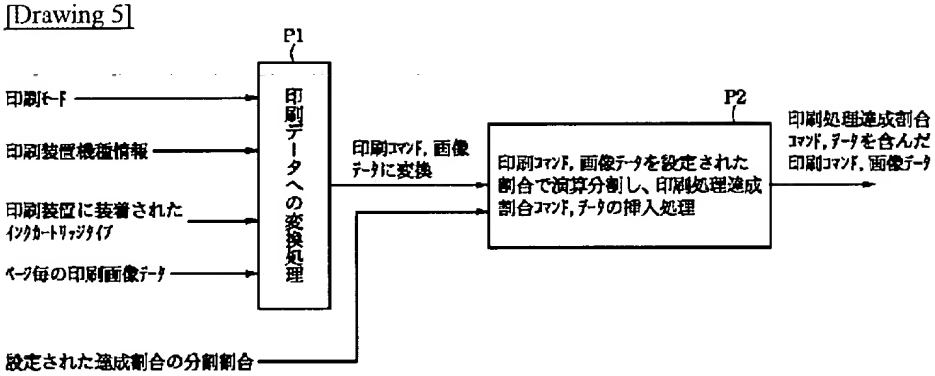
[Drawing 4]


開始
使用者による印刷実行命令？
(1)
N
Y
(2)
接続された印刷装置機種情報，装着されたインクカートリッジタイプ情報を取得
(3)
印刷画像データを印刷装置が印刷できる印刷コマンド，画像データに変換
(4)
印刷コマンド，画像データ内に、あらかじめ決められた割合で印刷処理達成割合コマンド，印刷データを埋め込むべき位置を算出する
(5)
算出された印刷コマンド，画像データの適切な位置に、印刷処理達成割合コマンド，データを埋め込む
(6)
印刷装置へ印刷データを送信し印刷処理を実行させる
印刷装置の動作手順へ

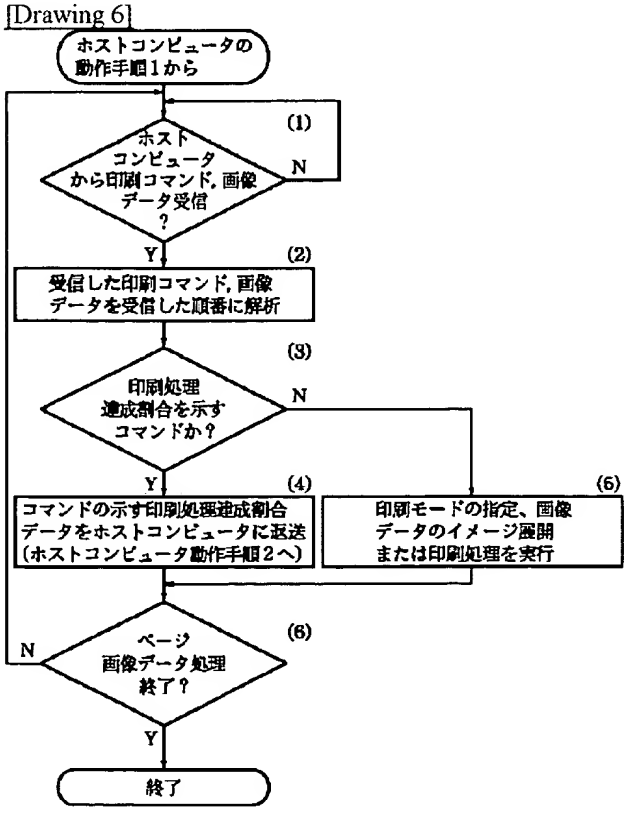
[Drawing 7]



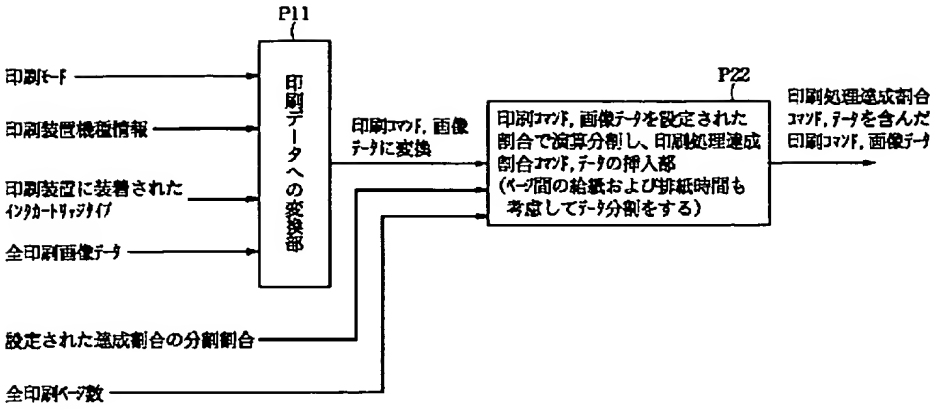
[Drawing 5]



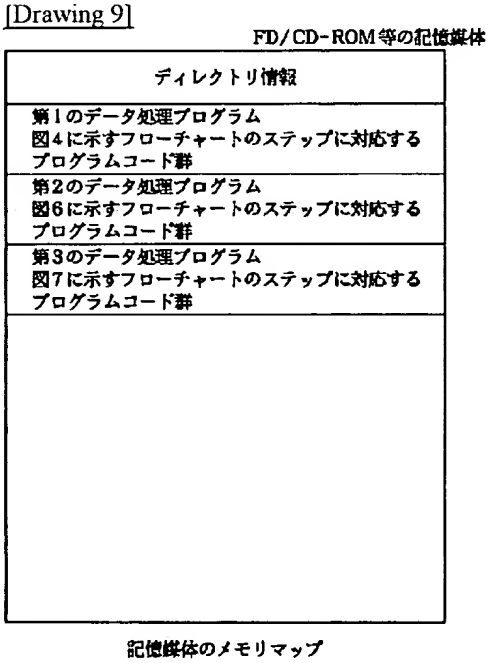
[Drawing 6]



[Drawing 8]



[Drawing 9]



記憶媒体のメモリマップ

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the storage with which the printer and the data processor stored the data-processing method of the printing system which can communicate mutually, and a printing system, and the program which a computer can read through predetermined communication media.
[0002]
[Description of the Prior Art] Received data are previously stored in the receive buffer for saving conventionally the received data sent from a host computer, and it is processing in the received turn.
[0003] In this case, in the printer which prints the image data transmitted from a host computer, when the advance situation of printing was checked, the advance situation of a printer actually had to be checked visually.
[0004]
[Problem(s) to be Solved by the Invention] Since the conventional printer was constituted as mentioned above, the timing to which the host computer transmitted print data differed from the timing to which a printer actually processes, and there was a trouble that the advance situation of print data could not be grasped exactly.
[0005] Moreover, from the actual advance situation by viewing, the completion time of printing could not be predicted sensuously and had the trouble that the printing processing time with dispersion could not be correctly deduced according to the content of print data.
[0006] this invention is what was made in order to cancel the above-mentioned trouble. the purpose of this invention By embedding the specific command which shows the completion rate of processing of the print data transmitted from the data processor into the print data of each page Since the printer which receives these print data returns printing processing achievement rate data to this specific command Based on the printing processing achievement rate data answered to the timing which was adapted for the analysis advance state of print data, a data processor can display a printing processing advance situation on real time. It is offering the storage which stored the data-processing method of the printing system which can make the printing processing advance progress situation of each page, the prediction time to a printing end, etc. recognize visually to a user, and a printing system, and the program which a computer's can read.
[0007]
[Means for Solving the Problem] An acquisition means for the 1st invention concerning this invention to be the printing system by which a printer and a data processor can communicate mutually through predetermined communication media, and to acquire predetermined resources information from the aforementioned printer, A generation means to generate the print data which should be transmitted to the aforementioned printer according to the print mode set up, A calculation means to compute the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the aforementioned print data generated by the aforementioned generation means and the aforementioned predetermined resources information which the aforementioned acquisition means acquired at the print data of each page, The pad means which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation means, It has a transfer means to transmit the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad means into each page to the aforementioned printer.
[0008] The aforementioned predetermined resources information that the aforementioned acquisition means acquired the 2nd invention concerning this invention contains the specification data of the aforementioned printer.
[0009] The 3rd invention concerning this invention is the printing system by which a data processor and a printer can communicate through predetermined communication media. A judgment means to judge whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected, When it judges with the aforementioned judgment means having detected the aforementioned specific command, it has a return means to return the specific data to the aforementioned specific command one by one to the aforementioned data processor.
[0010] A surveillance means for the 4th invention concerning this invention to be the printing system by which a data processor and a printer can communicate through predetermined communication media, and to supervise the specific command answered one by one from the aforementioned printer, The operation means which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one by the aforementioned surveillance means, and the content of each specific command one by one,

It has the control means which display on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation means.
[0011] The 5th invention concerning this invention makes the aforementioned specific command the degree rate command of printing processing achievement which shows the rate of the aforementioned print data processed by the printer.
[0012] The acquisition process which the 6th invention concerning this invention is the data-processing method of a printing system that a printer and a data processor can communicate mutually, through predetermined communication media, and acquires predetermined resources information from the aforementioned printer, The generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up, The calculation process which computes the insertion point which embeds the specific command which shows the rate of the aforementioned print data processed by the aforementioned printer from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page, The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process, It has the transfer process which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer.
[0013] The 7th invention concerning this invention is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media. The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected, When it judges with the aforementioned judgment process having detected the aforementioned specific command, it has the return process which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor.
[0014] The surveillance process which invention of the octavus concerning this invention is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media, and supervises the specific command answered one by one from the aforementioned printer, The operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one, It has the display process which displays on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation process.
[0015] The 9th invention concerning this invention is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The acquisition process which acquires predetermined resources information from the aforementioned printer, and the generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up, The calculation process which computes the insertion point which embeds the specific command which shows the rate of the aforementioned print data processed by the aforementioned printer from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page, The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process, It has the transfer process which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer.
[0016] The 10th invention concerning this invention is the storage which stored the program which the computer which controls the printing system by which a data processor and a printer can communicate through predetermined communication media can read. The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected, When it judges with the aforementioned judgment process having detected the aforementioned specific command, it has the return process which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor.
[0017] The 11th invention concerning this invention is the storage which stored the program which the computer which controls the printing system by which a data processor and a printer can communicate through predetermined communication media can read. The surveillance process which supervises the specific command answered one by one from the aforementioned printer, The operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one, It has the display process which displays on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation process.
[0018]
[Embodiments of the Invention] The [1st operation gestalt] Drawing 1 is drawing explaining the outline composition of the printing system concerning this invention.
[0019] In drawing, 1500 is a printer, 3000 is a host computer (a display 10 is included), and the printer (printer) 1500 and the

host computer 3000 are connected by the two-way communication line (bidirectional interface) 21. In addition, as a host computer 3000, general purpose computers, such as a personal computer and a workstation, may be used, for example, and if information interchange between each equipment is possible for the two-way communication line (bidirectional interface) 21, it is not necessary to connect physically. For example, information means of communications, such as infrared ray communication, are sufficient.

[0020] A printer 1500 is analyzed in the printing command transmitted through the two-way communication line (bidirectional interface) 21 from a host computer 100, and the turn to which image data was transmitted, and performs the processing.

[0021] Drawing 2 is a block diagram explaining the printing structure of a system which shows the 1st operation gestalt of this invention. In addition, a laser beam printer (drawing 1) is made into an example, and is explained here. Moreover, if the function of this invention is performed, even if it is the system by which processing is performed through networks, such as LAN, even if it is the system which consists of two or more devices even if it is the device of a simple substance, it cannot be overemphasized that this invention is applicable.

[0022] In drawing, 3000 is a host computer, it has CPU1 which performs the document processing system in which the figure, the image, the character, the table (a spreadsheet is included), etc. were intermingled based on the document processing system program memorized by ROM for a program of ROM3, and CPU1 controls each device connected to a system bus 4 in the gross.

[0023] Moreover, to ROM for a program of this ROM3, the control program of CPU1 as shown with the flow chart shown in drawing 4 etc. was memorized, the font data used for ROM for fonts of ROM3 in the case of the above-mentioned document processing system was memorized to it, and ROM for data of ROM3 has memorized to it the various data (for example, the program of various Page Description Languages, data for rasterizing of a font, etc.) used in case the above-mentioned document processing system etc. is performed.

[0024] By Option RAM etc., 2 is extensible RAM and functions as the main memory of CPU1, a work area, etc. 5 is a keyboard controller (KBC) and controls the key input from a keyboard 9 or a non-illustrated pointing device.

[0025] 6 is a CRT controller (CRTC) and controls the display of CRT display (CRT) 10. 7 is a disk controller (DKC) and controls access with the external memory 11 which memorizes a boot program, various applications, font data, a user file, an edit file, etc., such as a hard disk (HD) and a floppy disk (FD).

[0026] 8 is a printer controller (PRTC), and it connects with a printer 1500 through the predetermined bidirection interface (interface) 21, and it performs communications control processing with a printer 1500. In addition, CPU1 performs expansion (rasterize) processing of the outline font to the display information RAM field set up on RAM2, and makes WYSIWYG on CRT10 possible.

[0027] Moreover, CPU1 opens the various windows registered based on the command directed by the mouse cursor which is not illustrated on CRT10, and performs various data processing.

[0028] In a printer 1500, 12 is Printer CPU (CPU), controls access with various kinds of devices connected to a system bus 15 based on the control program memorized by external memory 14, such as a control program memorized by ROM for a program of ROM13, in the gross, and outputs the picture signal as a print-out to the printing section (printer engine) 17 connected through the printing section interface 16.

[0029] Moreover, for the program ROM of this ROM13, the control program which can perform CPU12 as shown with the flow chart of drawing 6 is memorized. Furthermore, the font data (outline font data is included) used in case the above-mentioned print-out is generated to ROM for fonts of ROM13 was memorized, and in being the printer no external memory 14, such as a hard disk, is [printer] in ROM for data of ROM13, it has memorized the information used on a host computer 3000.

[0030] The communications processing with a host computer 3000 of CPU12 has become possible through the input section 18, and the host computer 3000 constitutes the information in a printer 1500 etc. possible [a notice].

[0031] 19 is RAM, and it is constituted so that memory space can be extended by the option RAM which functions mainly as the main memory of CPU12, a work area, etc., and is connected to the extension port which is not illustrated.

[0032] In addition, RAM19 is used for a print-out expansion field, an environmental data storage field, NVRAM, etc. As for external memory 14, such as a hard disk (HD) mentioned above and an IC card, access is controlled by the disk controller (DKC) 20. It connects as an option and external memory 14 memorizes font data (the font data downloaded from host computer 3000 grade is included), EP (EP downloaded from host computer 3000 grade is included), form data (it downloads from host computer 3000 grade), etc.

[0033] Moreover, 1501 is the control panel mentioned above and a switch, a Light Emitting Diode drop, etc. for operation are arranged.

[0034] Moreover, the external memory mentioned above may be constituted so that not only one piece but two or more external memory which stored the program which interprets the printer control language from which it has at least one or more pieces, and an option font card and a language system differ in addition to a built-in font can be connected. Furthermore, it has NVRAM which is not illustrated and you may make it memorize the printer mode setting information from a control panel 1501 a user exception and according to a group.

[0035] Thus, in the constituted printer control system, on the band memory secured on RAM19, as data expansion is not performed from the head of a drawing object for every band each time in case a drawing object [as / ranging over two or more band boundaries] is developed, but it can return to the state when attaining a drawing sequence to the boundary this side of a drawing relevance band field, it is going to aim at shortening of the processing time.

[0036] Drawing 3 is drawing which explains the structure of the print data transmitted to a printer 1500 from the host computer 3000 shown in drawing 2 .

[0037] It is command data which PPP1 - PPPN show the degree of printing achievement in drawing. 0%, when the completion of page printing is made into the 5% of the degree display intervals of printing achievement 100%, a page printing start From the ink cartridge type information with which the print mode, the model information on a printer 1500, and printer 1500 which show printing grace etc. were equipped It is embedded as command data which show the degree of printing achievement to the position of 5% unit predicted to start in the image data when it prints to 100%.
[0038] Hereafter, the characteristic composition of this operation gestalt is explained with reference to drawing 2 etc.
[0039] A printer and a data processor are the printing systems which can communicate mutually through the predetermined communication media (two-way communication line 21) constituted as mentioned above. An acquisition means to acquire predetermined resources information from the aforementioned printer (printer 1500) (CPU1 performs the control program memorized by ROM3, and carries out acquisition processing), A generation means to generate the print data which should be transmitted to the aforementioned printer according to the print mode set up (CPU1 performs the control program memorized by ROM3, and carries out generation processing), By the aforementioned generation means It is a calculation means (the control program with which CPU1 was memorized by ROM3 is executed) about the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the generated aforementioned print data and the aforementioned predetermined resources information which the aforementioned acquisition means acquired at the print data of each page. calculation processing -- carrying out -- with the pad means (CPU1 executing, embedding and processing the control program memorized by ROM3) which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation means Since it has a transfer means (CPU1 executes the control program memorized by ROM3, and carries out transfer processing) to transmit the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad means into each page to the aforementioned printer The effective print data which can supervise the completion situation of processing of the print data transmitted to the position of the print data only divided in each page by processing in which a specific command is embedded can be generated without forcing a printer side a processing burden which makes the completion rate of printing processing calculate.
[0040] Moreover, since the aforementioned predetermined resources information which the aforementioned acquisition means acquired contains the specification data of the aforementioned printer, even if the content and printer of print data in each page differ from each other, it can embed a specific command in the exact position which shows the exact completion rate of processing at print data.
[0041] Furthermore, it is the printing system by which a data processor (host computer 3000) and a printer (printer 1500) can communicate through predetermined communication media. A judgment means to judge whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected (CPU12 executes the control program stored in ROM13, and carries out judgment processing), When it judges with the aforementioned judgment means having detected the aforementioned specific command Since it has a return means (CPU12 executes the control program stored in ROM13, and carries out return processing) to return the specific data to the aforementioned specific command one by one to the aforementioned data processor According to processing advance of print data, the degree rate of printing processing achievement can be notified to a data processor to suitable timing, without applying a burden to the processing which analyzes print data.
[0042] Moreover, it is the printing system by which a data processor (host computer 3000) and a printer (printer 1500) can communicate through predetermined communication media. A surveillance means to supervise the specific command answered one by one from the aforementioned printer (CPU1 executes the control program memorized by ROM3, and carries out surveillance processing), By the aforementioned surveillance means The operation means (CPU1 executes and carries out data processing of the control program memorized by ROM3) which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one, and the contents of each specific command one by one, Since it has the control means (CPU1 performs and carries out display processing of the control program memorized by ROM3) which display on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation means The printing processing advance situation of the print data transmitted from the data processor can be supervised for every page, and printing processing progress can be visually specified to the client slack user of print data.
[0043] Furthermore, since the aforementioned specific command is made into the degree rate command of printing processing achievement which shows the rate of the aforementioned print data processed by the printer, the degree rate command of printing processing achievement and other printing commands can be mistaken, it can discriminate that there is nothing, and specific processing to the degree rate command of printing processing achievement can be performed certainly.
[0044] Next, the procedure of a host computer 3000 is explained with reference to the flow chart shown in drawing 4 .
[0045] Drawing 4 is a flow chart which shows an example of the 1st data-processing procedure in the printing system concerning this invention, and corresponds to the processing by the side of a host computer 300. In addition, (1) - (6) shows each step.
[0046] At a step (1), when a printing run command is received by the user, the model information and the ink cartridge type information with which it was equipped on a printer 1500 which were connected are acquired through the two-way communication line (bidirectional interface) 21 by the step (2) by the software for a printer drive in a host computer 3000 (printer driver).
[0047] Next, at the printer driver of a host computer 3000, it changes into the suitable printing command and image data which

can understand a printer 1500 from the ink cartridge type with which the print mode, the model information on a printer 1500, and printer 1500 which show the image data to print, printing grace, etc. were equipped at a step (3).
[0048] And at a step (4), as shown in drawing 3 , when the completion of page printing is made into the 5% of the degree display intervals of printing achievement for a page printing start 100% 0%, it computes by CPU1 calculating the position of 5% unit predicted to start in the image data when it prints from the ink cartridge type information with which the print mode, the model information on a printer 1500, and printer 1500 which show printing grace etc. were equipped. And the command data PPP 1 in which the degree of printing achievement is shown - PPPN are embedded at the step (5) in the corresponding position.
[0049] And at a step (6), a host computer 3000 transmits the printing command and image data created by the aforementioned processing to a printer 1500 through the two-way communication line (bidirectional interface) 21, and ends processing.
[0050] Next, in a host computer 3000, drawing 5 explains how to calculate the printing processing achievement rate of the printing picture in a page unit.
[0051] Drawing 5 is drawing explaining the 1st printing processing achievement rate operation processing state with the host computer 3000 shown in drawing 2 .
[0052] first, CPU1 from the ink cartridge type information with which the print mode, the model information on a printer 1500, and printer 1500 which show printing grace etc. were equipped In the process P2 after passing through the process P1 changed into print data As opposed to the printing command in the print data changed in the process P1, and image data Time to consume, when the page image data is actually printed per page It divides at a printing command and a rate beforehand decided for every image data. The divided printing command, the command which shows the printing processing achievement rate at that time between image data, and data are embedded as shown in drawing 3 , and print data equipped with the print-data structure which should be transmitted to the printer 1500 as shown in drawing 3 are transmitted.
[0053] Drawing 6 is a flow chart which shows an example of the 2nd data-processing procedure in the printing system concerning this invention, and corresponds to the processing by the side of a printer 1500. In addition, (1) - (6) shows each step.
[0054] First, at a step (1), if the step (6) shown in drawing 4 receives the print data which contain a printing command and image data from a host computer 3000, by the step (2), a printer 1500 will analyze in order the receiving command which was able to be stored to the receive buffer secured on RAM19, and will perform the processing.
[0055] next, when the received command judges whether it is the command which shows a printing processing achievement rate and judges with it being the command which shows a printing processing achievement rate at a step (3) Since the command which shows 0% of printing processing achievement rates added before the print data of a page head is transmitted from the host computer 3000 at the step (4), a printer 1500 returns the data in which 0% of printing processing achievement rates is shown to a host computer side.
[0056] On the other hand, by the step (3), at a step (5), according to specification of a print mode etc., image expansion or printing processing of image data is performed in the place judged that is not the command which shows a printing processing achievement rate, and it goes henceforth [a step (6)] to it.
[0057] Next, at a step (6), it judges whether it is an end for page image data processing, and when it is judged that page image data processing is ended, processing is ended.
[0058] On the other hand, at a step (6), when it is judged that page image data processing is not ended, it returns to a step (1) and the same processing is repeated.
[0059] When the command which shows 5% of printing processing achievement rate which performed analysis and printing operation, calculated by this the printing command and image data which are received with the host computer 3000 beforehand, and was embedded to data is received and analyzed, a host computer is answered in the data in which 5% of printing processing achievement rates is shown.
[0060] Thus, a printer 1500 performs picture printing processing, returning the printing processing achievement rate the now present printer 1500 indicates the printing execution situation of the image data which was embedded beforehand at printing image data, and which should be printed to be to a host computer 3000 by performing analysis processing in the turn which received the received command. And the data which show 100% of printing processing achievement rates to the command which shows the last of the page like a delivery command are returned to a host computer.
[0061] Next, with reference to drawing 7 , status display processing operation of the host computer 3000 which receives operation of a printer 1500 is explained.
[0062] Drawing 7 is a flow chart which shows an example of the 3rd data-processing procedure in the printing system concerning this invention, and corresponds to the processing by the side of a host computer 3000. In addition, (1) - (4) shows each step.
[0063] First, at a step (1), if the printing processing achievement rate data returned from the printer 1500 are received, it will be a step (2), and a host computer 3000 saves the time and the printing processing achievement rate data which were received, it will be a step (3) and will calculate the anticipation time to the printing end of the page etc. by the difference which received last time and the time interval at the time of printing processing achievement rate data. And at a step (4), the above-mentioned operation time or a printing processing achievement rate is displayed on CRT10 connected to the host computer 3000, and processing is ended.
[0064] Hereafter, the characteristic composition of this operation form is explained with reference to the flow chart shown in drawing 4 , drawing 6 , drawing 7 , etc.
[0065] A printer and a data processor are the data-processing methods of the printing system which can communicate mutually through the predetermined communication media (two-way communication line 21) constituted as mentioned above. Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which

can communicate mutually through predetermined communication media can read. The acquisition process which acquires predetermined resources information from the aforementioned printer (step of drawing 4 (2)), The generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up (step of drawing 4 (3)), The insertion point which embeds the specific command which shows the rate of the aforementioned print data processed by the aforementioned printer from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page A calculation process (step of drawing 4 (4)), The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process (step of drawing 4 (5)), Since it has the transfer process (step of drawing 4 (6)) which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer The effective print data which can supervise the completion situation of processing of the print data transmitted to the position of the print data only divided in each page by processing in which a specific command is embedded can be generated without forcing a printer side a processing burden which makes the completion rate of printing processing calculate.

[0066] Moreover, it is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media (two-way communication line 21). Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected (step [of drawing 5] (1) - (3)), Since it has the return process (step of drawing 5 (4)) which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment process having detected the aforementioned specific command According to processing advance of print data, the degree rate of printing processing achievement can be notified to a data processor to suitable timing, without applying a burden to the processing which analyzes print data.

[0067] Furthermore, it is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media (two-way communication line 21). Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The surveillance process which supervises the specific command answered one by one from the aforementioned printer (step of drawing 7 (1)), The operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one (step of drawing 7 (3)), Since it has the display process (step of drawing 7 (4)) which displays on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation process The printing processing advance situation of the print data transmitted from the data processor can be supervised for every page, and printing processing progress can be visually specified to the client slack user of print data.

[0068] The [2nd operation form] With the above-mentioned 1st operation form, the printing command in print data and image data are received. Time to consume, when the page image data is actually printed per page Although the case where divide at a printing command and a rate (for example, 5% of serration) beforehand decided for every image data, and the divided printing command, the command which shows the printing processing achievement rate at that time between image data, and data were embedded as shown in drawing 3 was explained You may constitute so that the divided command data by which a rate is carried out from the total amount of printing image data and in which a ****** achievement rate is shown for every volume may be embedded. Hereafter, the operation form is explained.

[0069] Drawing 8 is drawing explaining the 2nd printing processing achievement rate operation processing state with the host computer 3000 shown in drawing 2 .

[0070] first, CPU1 from the ink cartridge type information with which the print mode, the model information on a printer 1500, and printer 1500 which show printing grace etc. were equipped In the process P22 after passing through the process P11 changed into print data As opposed to the printing command in the print data changed in the process P1, and image data the printing processing achievement rate in all printing image data the operation method Time to consume from the ink cartridge type information with which the print mode, the model information on a printer 1500, and printer 1500 which show printing grace etc. were equipped, when all the image data is actually printed is divided at a printing command and a rate which was able to be beforehand decided for every image data.

[0071] Moreover, the time of feeding and delivery also performs data division in consideration of this time from the information on the total number of page printings. And the divided printing command and the command data in which the printing processing achievement rate at that time is shown between image data are embedded, and print data equipped with the print-data structure which should be transmitted at a printer 1500 are transmitted.

[0072] The printing system hereafter applied to this invention with reference to the memory map shown in drawing 9 explains the composition of the data-processing program which can be read.

[0073] Drawing 9 is drawing explaining the memory map of a storage which stores the various data-processing programs which can be read by the printing system concerning this invention.

[0074] In addition, although it does not illustrate especially, the information for which the information which manages the

program group memorized by the storage, for example, version information, a maker, etc. are memorized, and it depends on OS by the side of program read-out etc., for example, the icon which indicates the program by discernment, may be memorized.
[0075] Furthermore, the data subordinate to various programs are also managed to the above-mentioned directory. Moreover, the program for installing various programs in a computer, the program thawed when the program to install is compressed may be memorized.
[0076] The function shown in drawing 4 in this operation form, drawing 6 , and drawing 7 may be carried out with the host computer by the program installed from the outside. And this invention is applied even when the information group which includes a program from an external storage is supplied by the output unit through storages, such as CD-ROM, a flash memory, and FD, or a network in that case.
[0077] As mentioned above, it cannot be overemphasized by supplying the storage which recorded the program code of the software which realizes the function of the operation form mentioned above to a system or equipment, and reading and performing the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that the purpose of this invention is attained.
[0078] In this case, the program code itself read from the storage will realize the new function of this invention, and the storage which memorized the program code will constitute this invention.
[0079] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, nonvolatile memory card, ROM, EEPROM, etc. can be used, for example.
[0080] Moreover, being contained when the function of the operation gestalt which performed a part or all of processing that OS (operating system) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but was mentioned above by the processing is realized cannot be overemphasized.
[0081] Furthermore, being contained, when the function of the operation gestalt which performed a part or all of processing that CPU with which the expansion board and expansion unit are equipped is actual, and was mentioned above by the processing is realized based on directions of the program code, after the program code read from the storage is written in the memory with which the expansion unit connected to the expansion board inserted in the computer or the computer is equipped cannot be overemphasized.
[0082]
[Effect of the Invention] An acquisition means according to the 1st invention concerning this invention for a printer and a data processor to be the printing systems which can communicate mutually, and to acquire predetermined resources information from the aforementioned printer through predetermined communication media as explained above, A generation means to generate the print data which should be transmitted to the aforementioned printer according to the print mode set up, A calculation means to compute the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the aforementioned print data generated by the aforementioned generation means and the aforementioned predetermined resources information which the aforementioned acquisition means acquired at the print data of each page, The pad means which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation means, Since it has a transfer means to transmit the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad means into each page to the aforementioned printer The effective print data which can supervise the completion situation of processing of the print data transmitted to the position of the print data only divided in each page by processing in which a specific command is embedded can be generated without forcing a printer side a processing burden which makes the completion rate of printing processing calculate.
[0083] According to the 2nd invention, since the specification data of the aforementioned printer are included, the aforementioned predetermined resources information which the aforementioned acquisition means acquired can embed a specific command in the exact position which shows the exact completion rate of processing at print data, even if the content and printer of print data in each page differ from each other.
[0084] According to the 3rd invention, it is the printing system by which a data processor and a printer can communicate through predetermined communication media. A judgment means to judge whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected, Since it has a return means to return the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment means having detected the aforementioned specific command According to processing advance of print data, the degree rate of printing processing achievement can be notified to a data processor to suitable timing, without applying a burden to the processing which analyzes print data.
[0085] A surveillance means according to the 4th invention to be the printing system by which a data processor and a printer can communicate, and to supervise the specific command answered one by one from the aforementioned printer through predetermined communication media, The operation means which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one by the aforementioned surveillance means, and the content of each specific command one by one, Since it has the control means which display on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation means The printing processing advance situation of the print data transmitted from the data processor can be supervised for every page, and printing processing progress can be visually specified to the client slack user

of print data.
[0086] According to the 5th invention, since the aforementioned specific command is made into the degree rate command of printing processing achievement which shows the rate of the aforementioned print data processed by the printer, the degree rate command of printing processing achievement and other printing commands can be mistaken, it can discriminate that there is nothing, and specific processing to the degree rate command of printing processing achievement can be performed certainly.
[0087] According to the 6th and the 9th invention, a printer and a data processor are the data-processing methods of the printing system which can communicate mutually through predetermined communication media. Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The acquisition process which acquires predetermined resources information from the aforementioned printer, and the generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up, The calculation process which computes the insertion point which embeds the specific command which shows the rate of the aforementioned print data processed by the aforementioned printer from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page, The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process, Since it has the transfer process which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer The effective print data which can supervise the completion situation of processing of the print data transmitted to the position of the print data only divided in each page by processing in which a specific command is embedded can be generated without forcing a printer side a processing burden which makes the completion rate of printing processing calculate.
[0088] According to the 7th and the 10th invention, it is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media. Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected, Since it has the return process which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment process having detected the aforementioned specific command According to processing advance of print data, the degree rate of printing processing achievement can be notified to a data processor to suitable timing, without applying a burden to the processing which analyzes print data.
[0089] According to the octavus and the 11th invention, it is the data-processing method of a printing system that a data processor and a printer can communicate, through predetermined communication media. Or it is the storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through predetermined communication media can read. The surveillance process which supervises the specific command answered one by one from the aforementioned printer, The operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one, Since it has the display process which displays on a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the aforementioned operation process The printing processing advance situation of the print data transmitted from the data processor can be supervised for every page, and printing processing progress can be visually specified to the client slack user of print data.
[0090] Therefore, by embedding the specific command which shows the completion rate of processing of the print data transmitted from the data processor into the print data of each page Since the printer which receives these print data returns printing processing achievement rate data to this specific command Based on the printing processing achievement rate data answered to the timing which was adapted for the analysis advance state of print data, a data processor can display a printing processing advance situation on real time. The effect of being able to make the printing processing advance progress situation of each page, the prediction time to a printing end, etc. recognize visually to a user etc. is done so.

[Translation done.]

* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] The predetermined communication media characterized by providing the following are minded, and it is the printing system by which a printer and a data processor can communicate mutually. An acquisition means to acquire predetermined resources information from the aforementioned printer A generation means to generate the print data which should be transmitted to the aforementioned printer according to the print mode set up A calculation means to compute the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the aforementioned print data generated by the aforementioned generation means and the aforementioned predetermined resources information which the aforementioned acquisition means acquired at the print data of each page The pad means which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation means, and a transfer means to transmit the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad means into each page to the aforementioned printer
[Claim 2] The aforementioned predetermined resources information which the aforementioned acquisition means acquired is a printing system according to claim 1 characterized by including the specification data of the aforementioned printer.
[Claim 3] The predetermined communication media characterized by providing the following are minded, and it is the printing system by which a data processor and a printer can communicate. A judgment means to judge whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected A return means to return the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment means having detected the aforementioned specific command
[Claim 4] The predetermined communication media characterized by providing the following are minded, and it is the printing system by which a data processor and a printer can communicate. A surveillance means to supervise the specific command answered one by one from the aforementioned printer The control means display to a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the operation means which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one by the aforementioned surveillance means, and the content of each specific command one by one, and the aforementioned operation means
[Claim 5] The aforementioned specific command is a printing system given in either of the claims 1, 3, and 4 characterized by considering as the degree rate command of printing processing achievement which shows the rate of the aforementioned print data processed by the printer.
[Claim 6] The predetermined communication media characterized by providing the following are minded, and it is the data-processing method of a printing system that a printer and a data processor can communicate mutually. The acquisition process which acquires predetermined resources information from the aforementioned printer The generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up The calculation process which computes the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process, and the transfer process which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer
[Claim 7] The predetermined communication media characterized by providing the following are minded, and it is the data-processing method of a printing system that a data processor and a printer can communicate. The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected The return process which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment process having detected the aforementioned specific command
[Claim 8] The predetermined communication media characterized by providing the following are minded, and it is the data-processing method of a printing system that a data processor and a printer can communicate. The surveillance process which

supervises the specific command answered one by one from the aforementioned printer The display process display to a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one, and the aforementioned operation process

[Claim 9] The storage which stored the program which the computer by which a data processor and a printer control the printing system which can communicate mutually through the predetermined communication media characterized by providing the following can read The acquisition process which acquires predetermined resources information from the aforementioned printer The generation process which generates the print data which should be transmitted to the aforementioned printer according to the print mode set up The calculation process which computes the insertion point which embeds the specific command which shows the completion rate of processing of the aforementioned print data from the aforementioned print data generated by the aforementioned generation process and the aforementioned predetermined resources information acquired according to the aforementioned acquisition process at the print data of each page The pad process which embeds the aforementioned specific command at the insertion point in the aforementioned print data based on the aforementioned insertion point computed by the aforementioned calculation process, and the transfer process which transmits the aforementioned print data by which the aforementioned specific command was embedded by the aforementioned pad process into each page to the aforementioned printer

[Claim 10] The storage which stored the program which the computer which controls the printing system by which a data processor and a printer can communicate through the predetermined communication media characterized by providing the following can read The judgment process which judges whether the command in the print data transmitted from the aforementioned data processor was analyzed one by one, and the specific command was detected The return process which returns the specific data to the aforementioned specific command one by one to the aforementioned data processor when it judges with the aforementioned judgment process having detected the aforementioned specific command

[Claim 11] The storage which stored the program which the computer which controls the printing system by which a data processor and a printer can communicate through the predetermined communication media characterized by providing the following can read The surveillance process which supervises the specific command answered one by one from the aforementioned printer The display process display to a display the processing achievement rate of the print data of each page or the aforementioned processing end time which is transmitted to the aforementioned printer and processed based on the result of an operation by the operation process which carries out the prediction operation of the processing end time of the print data which are transmitted to the aforementioned printer and processed from the interval of each specific command answered one by one according to the aforementioned surveillance process, and the content of each specific command one by one, and the aforementioned operation process

---

[Translation done.]